

Press information

For further information, please contact:
Samantha Joubert, Marketing Manager
Tel: +27 11 821 3602 / Fax: +27 (0) 86 681 4342
Samantha.joubert@skf.com

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First underwater stabilizer fin replacement keeps luxury cruise liner on schedule

A collaboration between SKF and underwater repair specialist Trident Group has completed the first replacement of an SKF S-type retractable Fin Stabilizer on a floating vessel.

The global cruise industry is riding a wave of popularity. Passenger numbers are forecast to pass the 25 million mark for the first time this year, up from around 7 million at the turn of the Millennium. With an average annual growth rate of around 7 per cent since 1980, cruising has transformed itself from a niche interest into a \$37 billion industry that provides jobs for more than 950,000 people.

While much of the popularity of holidaying by ship stems from the vessels' extensive facilities and attentive service, it also relies on hidden technology to give passengers a comfortable journey, even in inclement conditions. Beneath the waterline, most modern cruise vessels are equipped with a pair of hydraulically-controlled stabilizer fins which can be deployed to counteract the effect of rough sea conditions on the motion of the vessel. When not required they can be folded away into the hull, minimising drag and enabling manoeuvring in ports. Many of those fins are manufactured and maintained by SKF.

Operating on the high seas always involved a degree of uncertainty, however. In 2014, scheduled inspection of a cruise vessel revealed damage to the port stabilizer fin, most likely to have been caused by a collision with underwater debris. To avoid further damage, the decision was taken to take the stabilizer out of use until the ship's next scheduled overhaul.

In March 2017, the vessel entered dry-dock in Germany for a five-day scheduled overhaul. A team of engineers from SKF in Hamburg was dispatched to the site to dismount and repair the unit. When the team had removed the stabilizer from the vessel, however, inspection revealed that the damage was more serious than anticipated. The impact had bent or broken several critical parts in the stabilizer mechanism. Fixing them would require full disassembly, extensive machining operations and the replacement of a number of major components.

The work was not unduly difficult, SKF regularly repairs and overhauls stabilizer units that have been damaged at sea, but in this case, time was not on their side. The team calculated that the work required would take at least 150 hours. Even with round the clock operation, it was impossible to complete during the dry-dock time available.

2/...First underwater stabilizer fin

SKF South Africa (Pty) Limited

PO Box 13157, Witfield, 1467, Visiting address 4B Saligna Street, Hughes Business Park, Witfield 1459, South Africa
Tel 011 821 3500, www.skf.com

I.G. Cillilié (Managing), B.J. Dailly
Reg. No.: 1914/004430/07 Vat. Reg. 4160112928

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And with the vessel scheduled to pick up a full complement of passengers immediately after leaving the dry dock, the overhaul period could not be extended.

To complete the work in a timely fashion without creating disruption for passengers, SKF and the vessel's owners decided on a radical course of action: underwater replacement. Two steel plates were mounted over the fin box opening to seal the hull and the vessel was returned to service. Meanwhile SKF transported the stabilizer to Hamburg to complete the necessary repairs.

Once the unit had been reassembled and tested, SKF shipped the main body of the stabilizer in a container to a port in the Canary Islands. The control systems and other small parts were loaded onto the vessel in Europe and travelled with it on its journey to the Canary Islands where it was scheduled to pick up the first passengers of its winter season.

In the Canary Islands, a team from specialist marine engineering company Trident Group prepared the stabilizer for underwater installation. That process involved protecting and waterproofing all the parts of the mechanisms that are normally not exposed to sea water.

At the beginning of November 2017, the vessel arrived on schedule for a 58 hour layover in port. Under perfect conditions, clear water and mild water temperatures the Trident team immediately set to work. They installed a waterproof dome around the fin box inside the hull, allowing divers to safely remove the steel plates that had previously sealed the opening. The stabilizer fin was then lowered into position next the hull using a crane and the dive team manoeuvred it into position and mounted it in place. With the fin box now watertight and secure, they were then able to remove the temporary dome.

Once the basic installation work was completed on schedule, engineers from SKF sailed with the vessel on its onward journey to the Caribbean. During the first day of that voyage, they were able to complete the installation process, connecting the stabilizer control systems and testing the operation of the unit.

SKF is a leading global supplier of bearings, seals, mechatronics, lubrication systems, and services which include technical support, maintenance and reliability services, engineering consulting and training. SKF is represented in more than 130 countries and has around 17,000 distributor locations worldwide. Annual sales in 2015 were SEK 75 997 million and the number of employees was 46 635. www.skf.com

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By Laverick Media Communications T: +27 (0) 11 0400 818 sonia@laverickmedia.co.za / www.laverickmedia.co.za

SKF South Africa (Pty) Limited

PO Box 13157, Witfield, 1467, Visiting address 4B Saligna Street, Hughes Business Park, Witfield 1459, South Africa
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